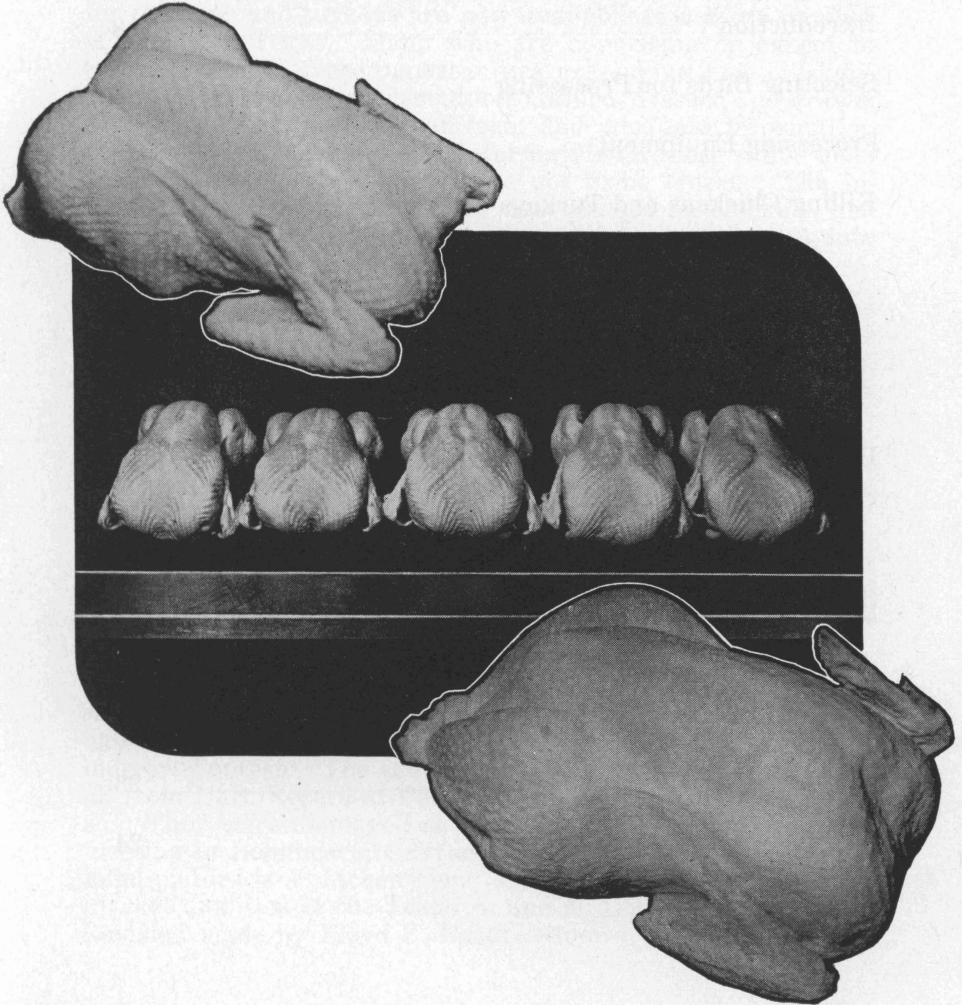


PROCESSING POULTRY



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G. G. Gibson, Director, College Station, Texas

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INTRODUCTION

Locker plants, home storage units and other cold storage for chickens and turkeys are now available to a large number of people in Texas. Many who are now using or expect to take advantage of the opportunities are asking how chickens and turkeys should be selected, bled, killed, dressed and drawn. This indicates a need for uniform and adequate information on these skills. Some desire information on these skills when the carcasses (dressed birds) are not to be frozen. The information given in this circular can be used on chickens and turkeys for immediate home use, and frozen to be put into locker or sold.

The aim of everyone who processes chickens and turkeys should be to maintain as much of the quality possessed by the live bird as possible. The skills used in selecting, bleeding, killing, dressing and drawing chickens and turkeys will affect the per cent of live bird quality that is maintained.

Edible chickens and turkeys of highest quality can be made available when the recommendations in this circular are used.

Pictures on the front cover page show the result of proper processing, thus maintaining all the quality possessed by live poultry. Procedures used in processing will also influence the time poultry will maintain its maximum qualities.

The upper left-hand picture shows a 4.2 pound, nine-week-old chicken. It is one of 12 chickens in the champion entry of the senior division in the 1952 Texas Chicken of Tomorrow Contest. The center picture shows five turkey hens, all from U. S. Record-of-Performance turkey breeders in Texas. They were displayed at the National Turkey Federation meeting in Longbeach, California, in 1951. The lower right-hand picture is a chicken hen. It is from a breeding pen for market qualities at the Texas A. and M. College poultry farm. Revision made by Floyd Z. Beanblossom.

PROCESSING POULTRY

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SELECTING BIRDS FOR PROCESSING

Chickens and turkeys selected for processing must possess good quality factors if a high grade carcass is to be made available. Methods and skills used in processing can lower the quality and grade of the carcass, but they cannot improve upon that which the live bird possessed. This is equally true for poultry to be put into the frozen food locker, used immediately, or sold.

For best quality use the following factors when selecting chickens and turkeys for the frozen food locker, immediate home use, or to be sold.

Age. Select young birds such as broilers, fryers, roasters, such as young hens and capons, also turkeys, 24 to 32 weeks old.

Fleshing. Select birds with full, well rounded breast, also thick legs and thighs.

Fat. Select birds with an even covering of fat over the entire body. Thick skin on the

back of the neck between the first wing joints usually indicates that the body is covered with fat. A layer of fat over the ribs indicates that the body is well fattened since this area is the last to lay on fat.

Waste. Select birds that do not have large rear abdomen with excess fat or watery fluid.

Deformities. Select birds that do not have crooked backs and breasts, especially, for cold storage locker use. Deformed carcasses are never of the best quality.

Health. Select birds that are healthy and vigorous. Thin, poorly fleshed and otherwise unthrifty birds are usually not of good quality for food.

PROCESSING EQUIPMENT

Good equipment of the proper kind is necessary for efficient killing, dressing and drawing of chickens and turkeys. The amount and kind of equipment will depend upon

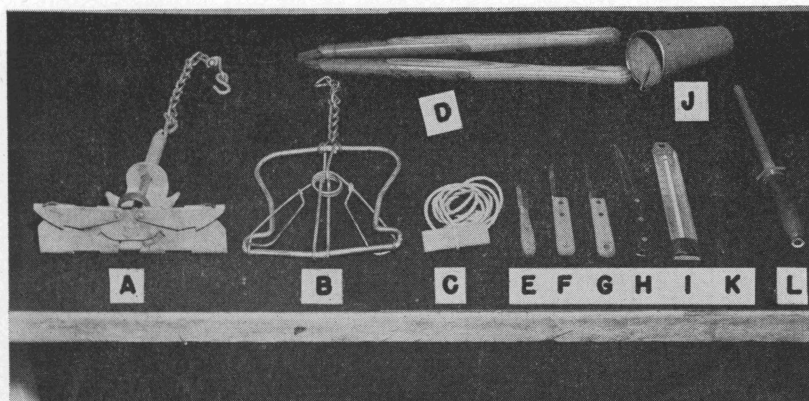


Fig. 1—Equipment for killing and dressing.

the number of birds to be processed. Fig. 1 shows a part of the equipment needed.

It includes Shackles (A and B) for hanging the birds, small rope and block of wood (C) also used for hanging birds, Cutting Shears (D) used especially for cutting off head, neck and feet, Pinning Knife (E) for removing pinfeathers, Sticking Knives (F and G) for bleeding and braining chickens and turkeys, Cutting and Boning Knife (H) used to disjoint and bone birds, Thermometer (I) for testing temperature of water, Blood Cup (J) for catching blood and holding bird's head down for good bleeding, Pliers (K) used to pull wing coverts when processing turkeys, and Carborundum Stone (L) used to keep knives sharp. In addition to the equipment shown in Fig. 1 a container for scalding should be available. The scalding container should be

large enough to hold 10 gallons or more of water. A smaller scalding container can be used, but water is harder to keep at proper temperature. Water temperatures used range from 123 to 180 degrees Fahrenheit. The best temperature to use will depend upon the method used in plucking. One hundred and twenty-three to 130 degrees Fahrenheit is recommended to produce the best grade of carcass. It will take higher temperatures to remove feathers easily unless an efficient job of braining is done. *If processing is to be done on a commercial basis, other equipment would be needed.*

KILLING CHICKENS AND TURKEYS

After birds have been selected that possess good quality, every effort should be made to maintain it in the carcass. The use of proper equipment will help. Important as selection and equip-

ment are, they will not insure a carcass of high grade with all the live bird quality. The per cent of live bird quality

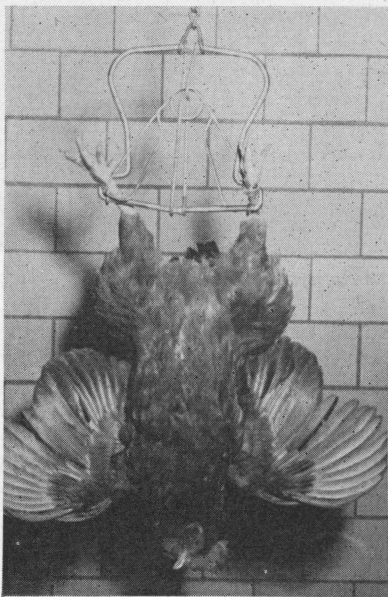


Fig. 2—Feet of bird correctly placed in shackle.

maintained in the carcass will depend largely upon the efficiency in doing the jobs necessary in processing. It is also important to do the jobs in the correct order. These jobs are discussed under the following headings in the order recommended for greatest efficiency.

Starve. Do not feed chickens and turkeys for 12 to 14 hours before processing. During this time they should have available all the water they will drink. This will make drawing easier.

Bleeding. Chickens and turkeys which have been thoroughly bled will be carcasses that possess greater keeping qualities than if poorly bled. Blood showing around the joints, in veins on the body and in the feather follicles (the depression from which the feather grows) indicates poor bleeding. Bruises on the carcass will cause poor bleeding and discoloration at that point.

Use the recommendations given here for good bleeding.

- 1) Hang bird by its feet, head down as shown in Fig. 2. The shackle used to hold bird should be located so the thighs of the hanging bird are even with the operator's face.
- 2) Grasp the bird's head with left hand, the comb resting in his palm, as shown in Fig. 3. Care should be taken to avoid holding the bird's throat in such a manner that flow of blood will be stopped.
- 3) Press on each side of the bird's head where upper and lower mandibles (beak) join. Open bird's mouth with two last fingers of left hand, as shown in Fig. 4.
- Do not use sufficient pressure on head to close throat thus cutting off flow of blood.
- 4) Insert sticking knife through mouth and into throat with sharp edge away from operator in order to make correct cut, as shown in Fig. 3. To make correct cut, first, turn knife edge toward neck bones, then place knife so blade crosses blood vessels as indicated in Fig. 4.



Fig. 3—Beginning of bleeding process.
Cutting edge of knife away from
blood vessels.

Pressure placed on knife point as it is withdrawn from the mouth will insure cutting blood vessels. Fig. 5 illus-



Fig. 4—Finish of bleeding process.
Cutting edge of knife towards
blood vessels.

trates the blood vessels to be cut and the proper angle for cutting to get most efficient and complete bleeding.

Braining. Feathers on chickens and turkeys may be loosened by piercing the back lobe of the brain which controls the feather muscles. This part of the brain is lo-

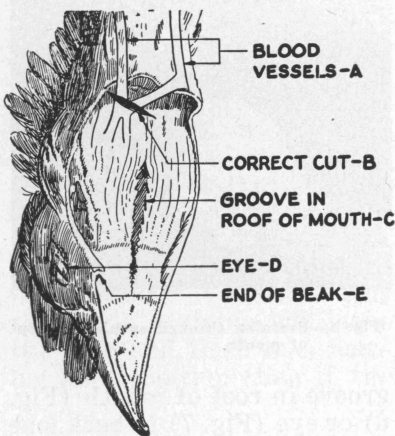


Fig. 5—Illustration showing blood vessels
and correct angle to cut for
bleeding.

cated at the junction of the skull and neck. Loosening the feathers makes it possible to pluck them without hard-scalding the chicken or turkey. This is *essential* since the quality of the carcass is lessened by hard scalding. Torn skin is also likely to be an indirect result of poor braining.

Use these recommendations for efficient braining. Hang bird and hold the head as recommended under Fig. 3 and 4 for bleeding (Page 7) and

puncture back lobe of bird's brain. Insert knife through

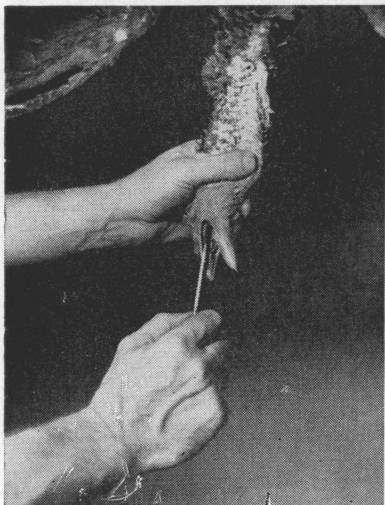


Fig. 6—Braining through opening in top of mouth.

groove in roof of mouth (Fig. 6) or eye (Fig. 7) to back lobe of brain as indicated by knife point (Fig. 8). One twist of the knife blade will assist in destroying brain tissue.

Attaching Blood Cup. Immediately after braining and before releasing bird's head, attach blood cup (Fig. 1-G). Do this by forcing the hook through the bird's lower mandible (beak) from outside to inside as shown (Fig. 9). If this is done properly the bird's mouth will be held open and blood will be allowed to drain freely. Cups of proper weight and size for chickens and turkeys should be used. This will hold the head down,

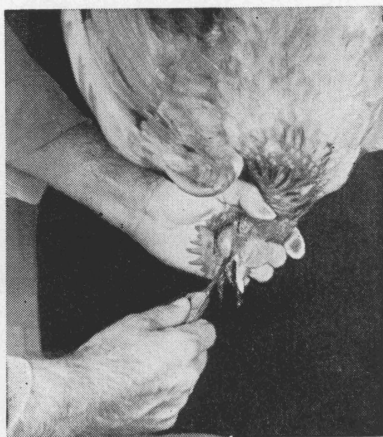


Fig. 7—Braining through eye socket.

which also aids in thorough bleeding. The blood cup should remain attached until the bird is through flopping. This will also help to keep the

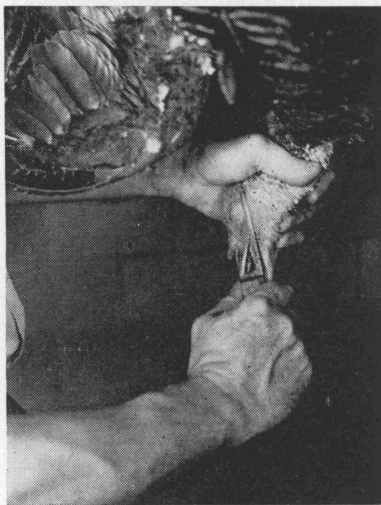


Fig. 8—Knife point showing location of the lobe of brain to be stuck when braining.



Fig. 9—Attaching blood cup.

bird from throwing blood on the operator.

Use of Funnels. Funnel shaped containers are sometimes used to hold birds. When these are used care should be taken to provide proper size funnels for different sizes of birds. This procedure in processing increases labor necessary in killing and plucking. It is also necessary to remove birds before plucking primary and secondary wing feathers. The funnels may help to keep birds from being bruised while killing.

PLUCKING CHICKENS AND TURKEYS

The four methods used to pluck birds are dry-pick, semi-, intermediate and hard-scald. The semi-, and intermediate methods are most

commonly used by commercial firms and have been found to give the most desirable carcass. This means that the highest per cent of live bird quality is maintained. To use the semi-scald method the following procedure is recommended. Pull the primary and secondary wing feathers and main tail feathers about 10 seconds after bleeding and braining have been done. The bird should then be put into water which has been heated to 123 to 130 degrees Fahrenheit. Hold the bird by its feet and force it up and down in the water so the water will be sure to reach the skin on all parts of the bird. Do not leave the bird in water over 60 seconds. This method of scalding will leave the skin and flesh in a more normal condition than if the



Fig. 10—Pulling primary wing feathers after braining.



Fig. 11—Position of hand to twist main tail feathers from bird.



Fig. 12—Main tail feathers removed by twist of hand.



Fig. 13—Plucking bird.

bird is scalded by intermediate or hard scalded method. Fig. 14-B shows a carcass where semi-scalding method has been used.

The use of water hot enough to loosen the bird's feathers is known as intermediate and hard-scalding. These methods of scalding will cause the outer skin to peel and as a result the carcass will become discolored. There will also be greater dehydration of the carcass. When these methods of plucking are used, braining is not necessary, but thorough bleeding is just as essential as in either dry picking or semi-scalding. Fig. 14-A shows a carcass which has been hard-scalded.

When the dry picking method is used the skin maintains its natural color. No water is used when this method of picking is practiced. The bird should be bled and brained as

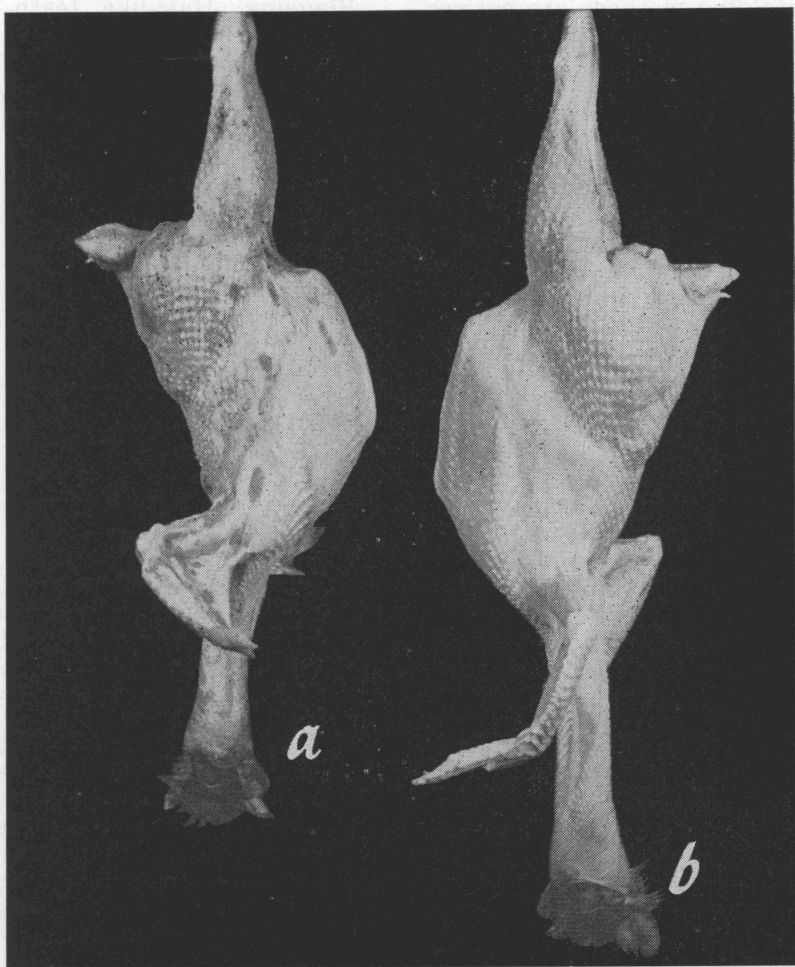


Fig. 14—Carcasses showing skin conditions when different methods of scalding were used.
A.—Hard-scald. B.—Semi-scald or dry pick.

if semi-scald picking method is used.

Water temperatures of 135 to 139 degrees Fahrenheit have recently become known as the intermediate scald. These temperatures will cause feathers to loosen but will also cause a part or all of the outer

skin to peel off. When this method of scalding is used the carcasses should be kept in ice until sold for consumption, or wrapped in moisture-vapor proof containers as soon as animal heat is out of the carcasses and then frozen. The intermediate and hard

scalding methods are not recommended for long storage.

Removing Feathers. Unless feathers are removed properly the skin is likely to be torn. Always pull the feathers from the bird with the grain. Torn skin will permit greater dehydration and lower the grade of the carcass. Remember to pull primary and secondary wing feathers and main tail feathers before scalding.

Removing Pinfeathers. Place the pinning knife (Fig. 1-F) under the pinfeather. Then place the thumb against feather and by pressing against knife pull feather out of carcass. Do not rub or scrape the carcass to remove pinfeathers. This is likely to break the skin and lower the keeping qualities and grade of the carcass.

Singeing. Hair-like feathers (Filoplumes) usually remain on the carcass after feathers and pinfeathers are removed. Remove these by passing the carcass over an open flame. The flame should be one that will not leave carbon or soot. A flame that is clear or blue is most desirable. Care should also be taken not to heat the skin. As stated under heading of removing pinfeathers, do not rub or scrape carcass vigorously, as this will break the skin.

DRAWING CHICKENS AND TURKEYS

The carcass may be drawn either after cooling or immediately after killing and plucking. The grease in the fat will not smear over the skin

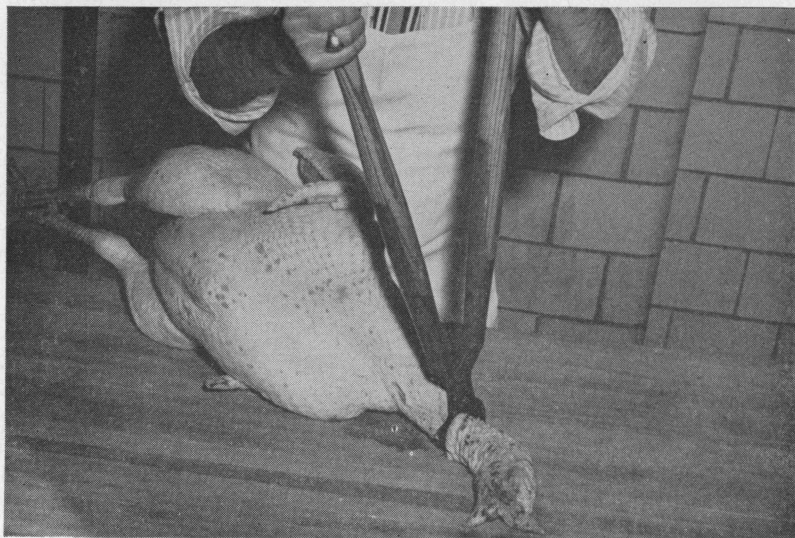


Fig. 15—Remove head by disjoining neck close to the head.

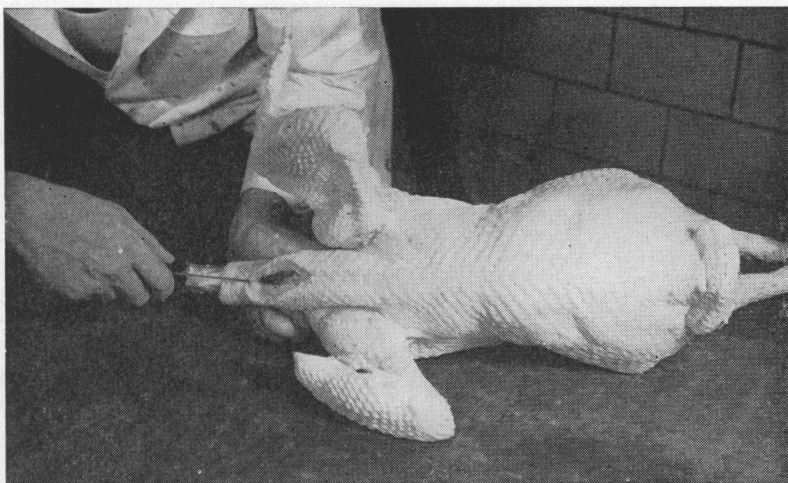


Fig. 16—Cutting skin to remove neck.

and the flesh will be firmer after carcass is cooled thereby making the job of drawing easier. Twelve to 24 hours of cooling at a temperature of 40 degrees Fahrenheit is recommended. The method to be used in cooking, also the age, size, tenderness, and personal choice will determine whether the carcass will be left whole, halved, quartered or disjointed.

Whole Carcass. The following steps for drawing are recommended when the carcass is to be left whole:

1) Cut the head off, leaving about three-fourths of the neck on the body. (Fig. 15.)

2) Split the skin down the back of the neck to a point between the first wing joints. (The skin is left on the car-

cass to be used in trussing. See Fig. 16.)

3) Peel the skin from the neck and remove the crop. (Crop hangs under the neck.) Care should be taken not to tear skin on the breast. (Fig. 17.)

4) Cut the neck from the body at a point between the first wing joints next to the body. (Fig. 18.)

5) If tendons are to be pulled from the legs it should be done before removing shanks. Fig. 19 shows this procedure. This can be done easily with proper equipment.

6) Remove legs at the hock joints. Cut so some of the leg scale is left at joint. This will keep the meat from pulling away from the joint when



Fig. 17—Removing crop. Skin on neck has been peeled back to wing joints.



Fig. 18—Cutting neck off between wing joints after skin has been pulled off neck.

cooking and leave the bone bare. (Fig. 20.)

7) Remove the oil sack which is located on top at base of tail (Fig. 21.)

8) Lay the carcass on its back and with a sharp knife make a vertical (up and down) opening into the abdominal cavity. Begin cutting about three-fourth to one inch below the end of the keel or breast bone (Fig. 22). Continue cutting down to and around the vent.

Most people prefer this method of drawing for chicken or turkeys when buying for roasting or baking.

Another method of entering the abdominal cavity is to make a lateral cut about half way between the end of the breast bone and vent, then cut around the vent as shown in Fig. 23.

9) Remove the intestines, gizzard, liver, heart, and lungs through the opening made in Step 8. With care, the intestines can be removed without being ruptured.

10) Remove the gizzard and liver from the entrails.

11) Split the gizzard lengthwise through one of the large muscles. If care is used, the pouch containing the feed can be removed without being ruptured. (Fig. 24, A & B.) Remove liver from entrails. Care should be taken not to rupture gall.

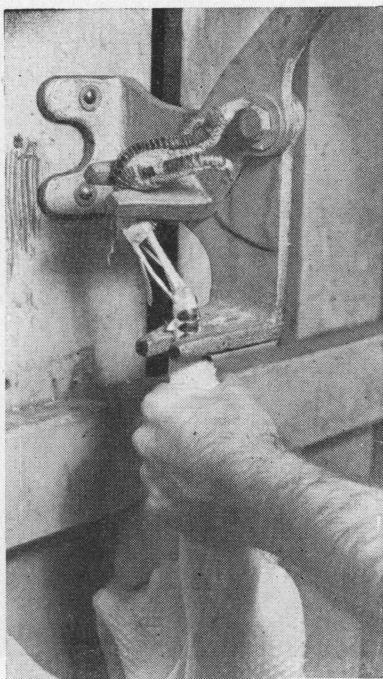


Fig. 19—Pulling tendons.

12) Split the heart open and wash free of blood. (Fig. 25.)

13) Wash the giblets (liver, gizzard and heart) and lay them aside. (Wrap separately.) (Fig. 26-B.)

14) The lungs are located toward the front end of the body cavity and are embedded between the ribs. To remove them place the fingers next to the backbone and force them under the lungs, peeling them out.

15) Wash carcass in cold water if necessary. Carcass

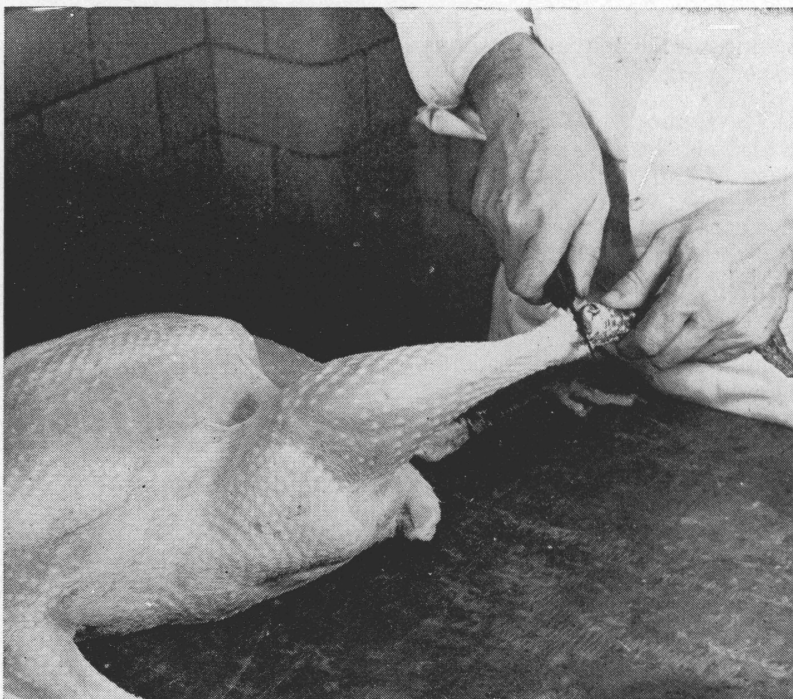


Fig. 20—Removing leg at hock joint.

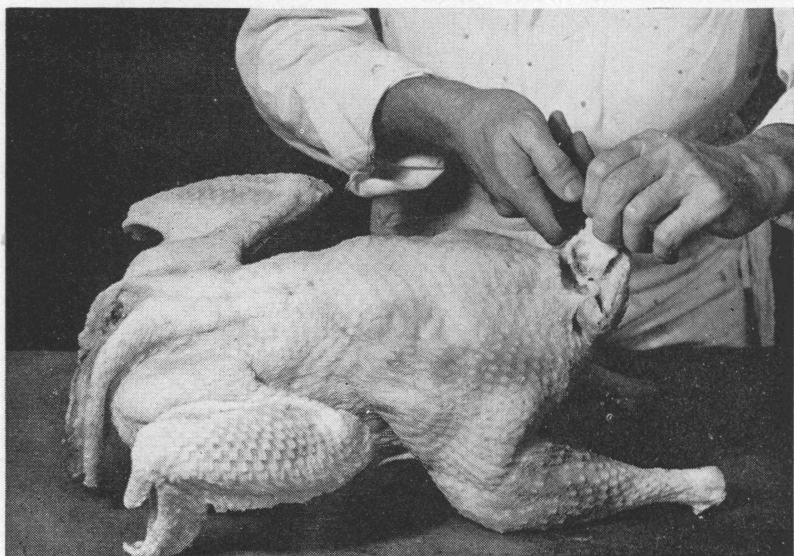


Fig. 21—Removing oil sack.

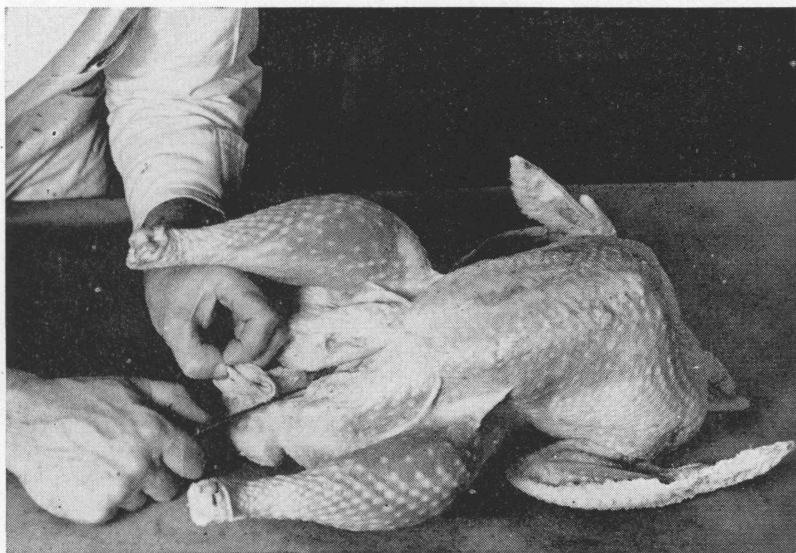


Fig. 22—Vertical cut to remove entrails.

is now ready for trussing. See Page 20 for details on trussing.

Halved, Quartered, or Disjointed Carcass. The following method of drawing is rec-

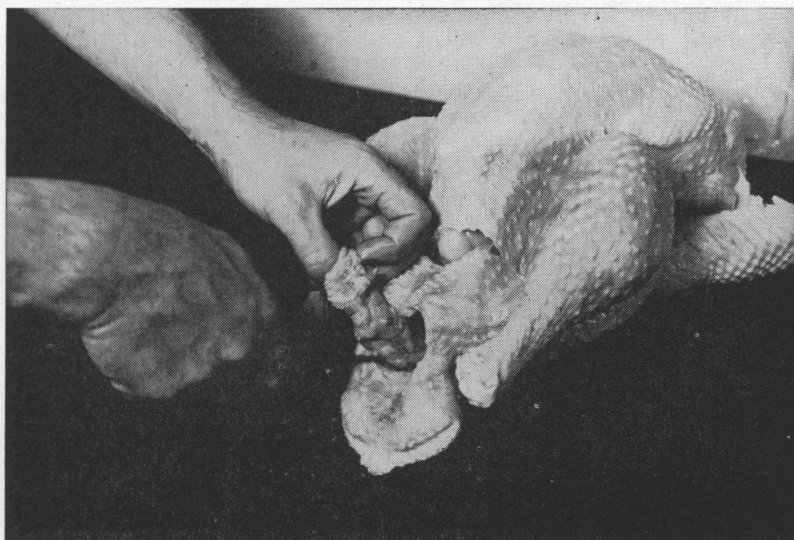


Fig. 23—Lateral cuts to remove entrails.

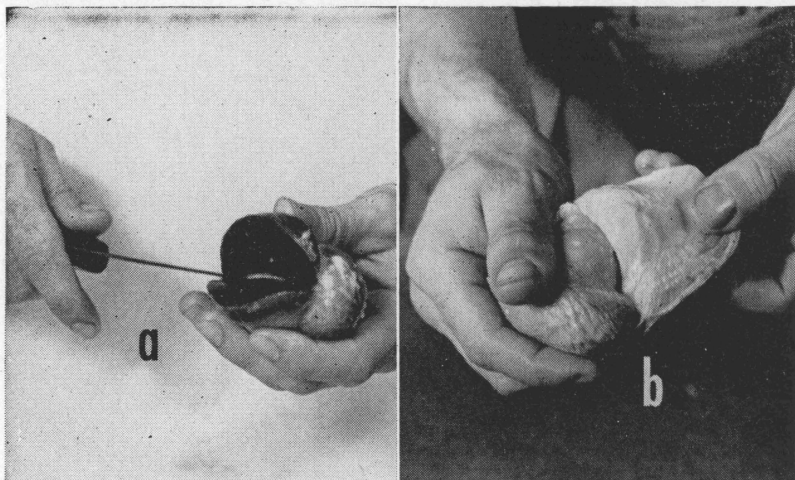


Fig. 24—A: Cut gizzard showing interior lining.
B: Peeling contents out of gizzard.

ommended for broilers and fryers, when the carcass is to be halved, quartered or disjointed as the occasion requires.

1) Remove the head by cutting the neck one-fourth of

the distance from the head to the body. Fig. 15, p. 12.

2) Remove the oil sack, which is located on top at the base of the tail. Fig. 21.

3) Remove legs at the hock

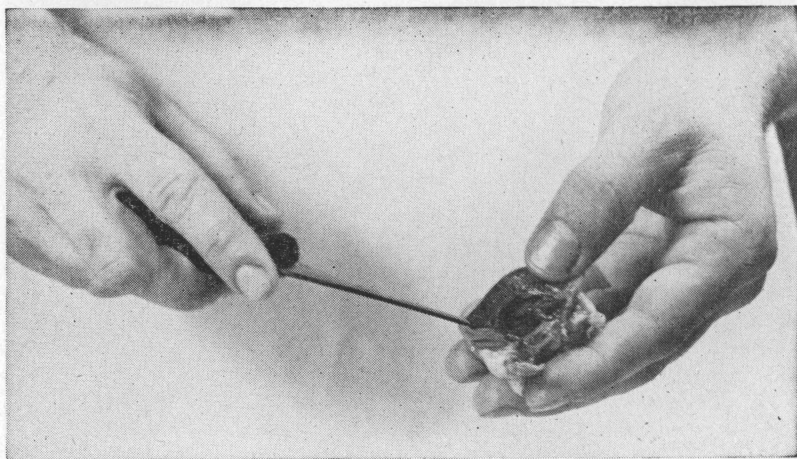


Fig. 25—Split heart to remove blood.

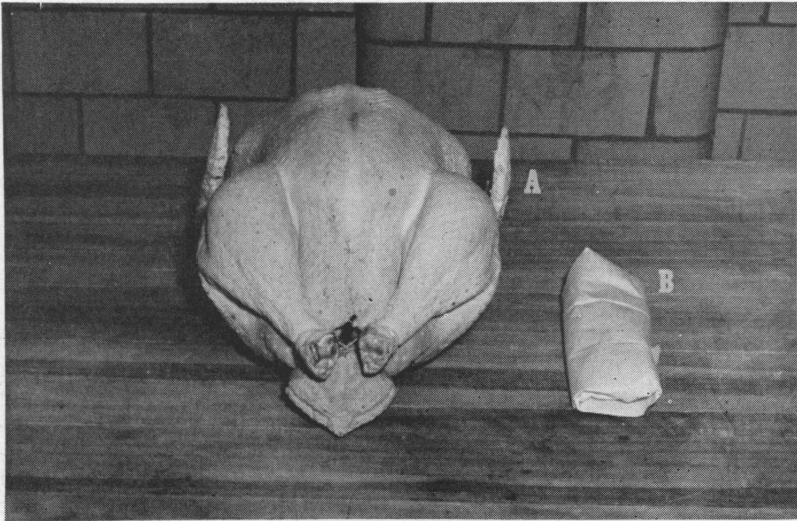


Fig. 26—Trussed bird and giblets. A—Carcass. B—Giblets.

joints. Fig. 20. Cut so some of the leg scale is left at the joint. This will keep the meat from pulling away from the joint when cooking which would leave the bone bare.

4) Split bird down the back. Do this by laying the carcass on its side, and then cutting from neck to tail. Place knife edge on top side of the neck where it joins the body and

cut through the back as shown in Figures 27A and 27B.

5) Spread the carcass apart and remove the intestines, crop, gizzard, liver, heart, and lungs. (Be careful not to break the breast or wish-bone.) (Fig. 28.)

6) To complete the job of halving cut through the cart-

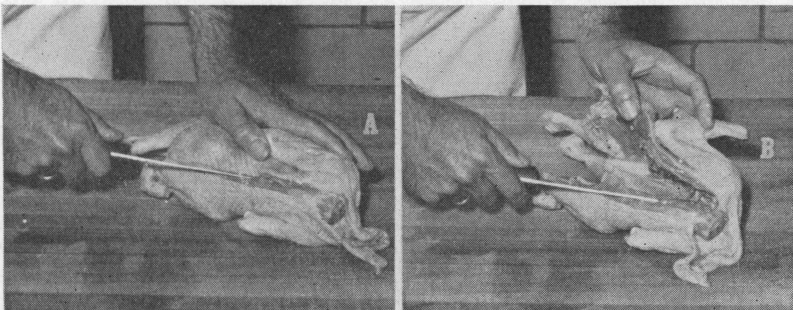


Fig. 27—Opening body cavity of young chicken for drawing and cutting in two halves.

ilage with tip end of knife at front of breast bone, then apply pressure with thumbs on each side of breast bone. This will loosen the meat on the sides of the breast bone so the breast can be cut in two pieces without cutting any bones. Figures 29A and 29B.

7) Wash the carcass with cold water.

8) Wash the giblets and lay them aside. Wrap them separately. (See Fig. 30-B.)

TRUSSING CHICKENS AND TURKEYS

Trussing the carcass will bind it tightly. This can be done by the following steps:

1) Draw the neck skin as far over the back as possible and fold wings so as to hold it in place (Fig. 31) if the carcass is going to be cooked before freezing. If carcass is to be frozen, place wings beside the body. This will make wrapping easier and fewer sharp points to puncture the wrapping material.

2) Tie the legs down to the tail head with a strong white cotton cord (Fig. 32). Or if bird has been drawn by making lateral cuts as in Fig. 23, then put ends of drumsticks through opening as in Fig. 33. The carcass is now ready to be cooked or wrapped for sale or storage.

3) The neck may be placed in the body cavity.

4) if the carcass is to be put in the frozen food locker or home storage unit, wrap the liver, heart, and gizzard separately. (They will discolor the flesh of the carcass if put on inside.)

PROCESSING TERMS DEFINED

Hard-Scald—

Any poultry items other than ducks and geese which have been immersed or otherwise subjected to water for dressing at a temperature higher than 139 degrees Fahrenheit. (Not recommended when poultry is to be frozen for storage.)

Intermediate Scald—

Any poultry items other than ducks and geese which have been immersed or otherwise subjected to water for dressing at temperatures of 135 to 139 degrees Fahrenheit.

Semi-Scald—

Any poultry items immersed or subjected to water at a temperature not to exceed 130 degrees Fahrenheit.

Dry Pick—

Any poultry items plucked without the use of water.

Dressed Poultry—

Poultry that has been killed, bled, and plucked. (Commonly known as New York dressed.)



Fig. 28—Removing entrails after back has been split open.

Braining—

The act of piercing the back lobe of the bird's brain.

This causes muscles controlling feathers to relax and thereby makes feathers easier to remove.

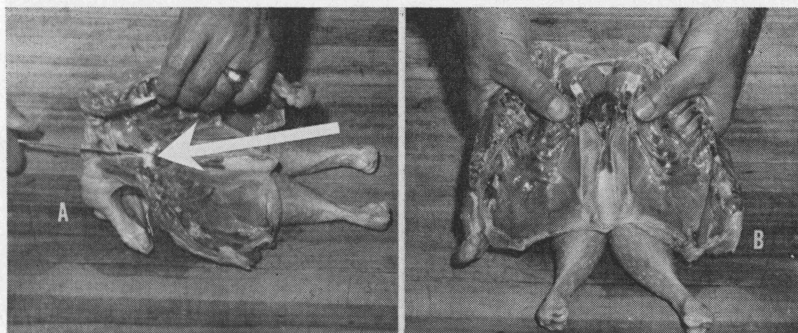


Fig. 29A and B—Cutting broiler in two pieces.



Fig. 30—Halved broiler with giblets wrapped separately.

Sticking—

The act of cutting blood vessels to bleed bird.

Disjointing—

The act of cutting bird into many pieces.

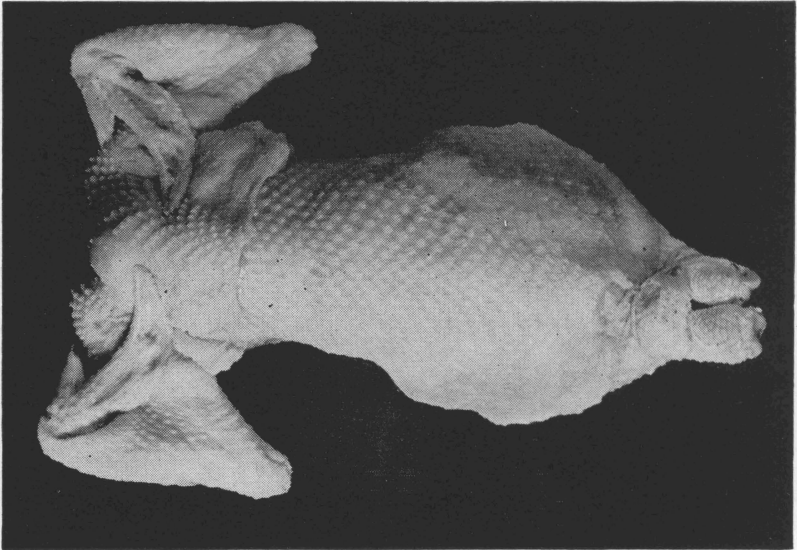


Fig. 31—Trussed bird ready to be cooked.

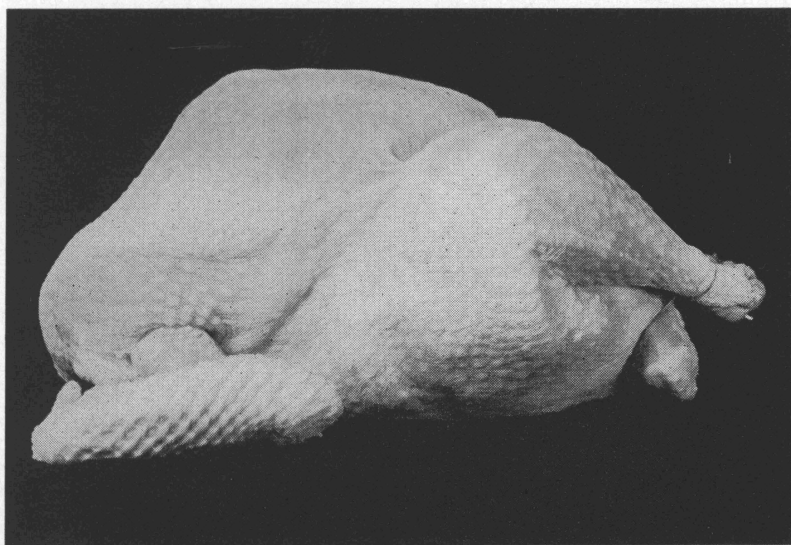


Fig. 32—Trussed bird showing legs tied to tail head.

Halving—

The act of cutting bird into two halves.

Quatering—

The act of cutting bird into two equal halves and then cutting each half into two pieces, one piece to contain back, thigh, and drumstick, the other part includes the wing and breast.

Trussed—

Drawn bird bound tightly.

Plucking—

The act of removing the feathers from the bird.

Singeing—

The act of burning filoplumes (hair-like feathers) on the bird.

DRESSING PERCENTAGES

Poultry will lose approximately 11 per cent of live weight when dressed. The loss when drawn is of course more and will vary according

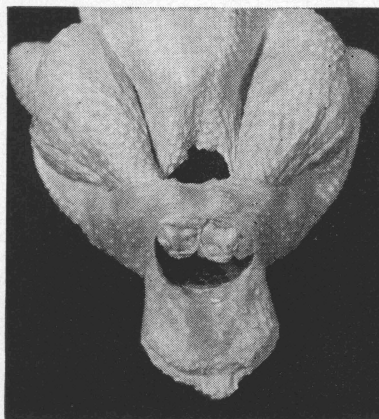


Fig 33—Trussed bird showing legs put through openings in skin.

to such things as age, breeding, fleshing, finish, and methods used in processing. The following figures are about the average per cent of loss of live weight for drawn poultry.

Chickens, 1½ to 2 lbs.	33-36
Chickens, 2 to 3½ lbs.	31-33
Fowl (Hens) 3½ up	28-31
Turkeys	18-25

SUMMARY

Select chickens and turkeys for processing that are in good health, fully fleshed and with an even covering of fat over the body.

Proper equipment used in killing and dressing chickens and turkeys will make the work easier and also more efficient.

Do not allow poultry to have feed 12 to 18 hours before killing but be sure they have plenty of water.

Bleed birds to insure thorough bleeding.

Brain birds to loosen feathers.

The semi- or slack-scald method of plucking is most desirable.

Torn skin will allow flesh to dry.

Bruised birds will cause poor bleeding.

The method used in drawing carcasses will depend upon whether they are to be left whole, halved or disjointed.

Age, size, personal choice and method of cooking will determine whether carcass is to be left whole, halved or disjointed.

Truss birds that are to be baked or roasted so they will be compact.